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IS 8813 (1995): Potassium silicate, technical [CHD 1: Inorganic Chemicals]

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पोटेशियम सिलिकेट, तकनीकी — विशिष्टि

(पहला पुनरीक्षण)

Indian Standard

POTASSIUM SILICATE, TECHNICAL — SPECIFICATION

(First Revision)

UDC 661·832·65

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

July 1995

Price Group 3

General Inorganic Chemicals Sectional Committee, CHD 003

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the General Inorganic Chemicals Sectional Committee had been approved by the Chemical Division Council.

Potassium silicate is used in welding electrode and cement industries. Consumption of the material is rapidly increasing in the country. The two grades of potassium silicate covered in this standard cater to the requirements of the welding electrode industry. Use of the material by the cement industry is also growing and specification for this grade of the material will be covered later when sufficient data is made available. The requirement of solid potassium silicate glass has not been included in this standard as it is not used in the industry.

This standard was originally published in 1978. In this revision the methods of test for all the requirements have been modified which are now being covered in a separate Indian Standard.

The composition of the Committee responsible for formulation of this standard is given in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

POTASSIUM SILICATE, TECHNICAL — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements and method of sampling for potassium silicate meant for use in welding electrode industry.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

IS No.	*Title*
4905 : 1968	Methods for random sampling
14212 : 1995	Sodium and potassium silicates — Methods of test

3 GRADES

3.1 The material shall be of two grades, namely, Grade 1 and Grade 2.

4 REQUIREMENTS

4.1 Description

The material shall be in the form of liquid. It shall be a thick, viscous and translucent mass. The material shall be water-white or slight grey in colour and shall be clear, free from dirt and other visible impurities.

4.2 Viscosity

The viscosity of the material shall be as agreed to between the purchaser and the supplier. The method for determination of viscosity shall be as prescribed in **A-12** of IS 14212 : 1995.

4.3 The material shall also comply with the requirements given in Table 1 when tested according to the methods prescribed in IS 14212 : 1995. Reference to the relevant clauses of IS 14212 : 1995 is given in col 5 of the table.

5 PACKING AND MARKING

5.1 Packing

The material shall be packed in air-tight iron, mild steel drums or high density polyethylene containers.

5.2 Marking

Each package shall be legibly and indelibly marked with the following information:

a) Name and grade of the material;

b) Indication of the source of manufacture;

c) Gross and net mass of the material; and

d) Batch number.

5.2.1 *BIS Certification Marking*

The packages may also be marked with the Standard Mark.

5.2.1.1 The use of the Standard Mark is governed by the provisions of Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

6 SAMPLING

6.1 The method of drawing representative samples of the material, number of tests to be performed and the method of determining the criteria of conformity of the material to the requirements of this specification shall be as prescribed in Annex A.

Table 1 Requirements for Potassium Silicate, Technical

(*Clause* 4.3)

Sl No.	Characteristic	Requirement for		Method of Test, Ref to Cl No. in IS 14212 : 1995
		Grade 1	Grade 2	
(1)	(2)	(3)	(4)	(5)
i)	Matter insoluble in water, percent by mass, *Max*	0·20	0·20	A-3
ii)	Relative density at 27/27°C	1·37 — 1.39	1·32 – 1·35	A-5
iii)	Total soluble silicates, percent by mass	37 – 38	32·5 – 34·5	A-6 and A-8
iv)	Ratio of total alkalinity (as K_2O) to total soluble silica (as SiO_2) (Molecular ratio $K_2O : SiO_2$)	1 : 3·1 ± 0·1	1 : 3·4 ± 0·1	A-9
v)	Iron (as Fe), percent by mass, *Max*	0·02	0·05	A-11

ANNEX A

(*Clause* 6.1)

METHOD OF SAMPLING OF POTASSIUM SILICATE

A-1 GENERAL REQUIREMENTS

A-1.0 In drawing, preparing, storing and handling samples, the following precautions and directions shall be observed.

A-1.1 Precautions shall be taken to protect the samples, sampling instruments and the containers for samples from contamination.

A-1.2 The material shall be thoroughly mixed before drawing the sample.

A-1.3 The samples shall be placed in suitable, clean and dry containers with proper closures.

A-1.4 Each sample container, after filling, shall be sealed air-tight and marked with full details of sampling.

A-2 SCALE OF SAMPLING

A-2.1 Lot

All the containers in a single consignment of the material of one grade drawn from a single-batch of manufacture shall constitute a lot. If a consignment is declared or known to consist of different grades or batches or manufacture, the containers shall be suitably separated and grouped to form lots as defined above.

A-2.1.1 Samples shall be tested from each lot for ascertaining conformity of the material to the requirements of the specification.

A-2.2 The number (*n*) of containers to be chosen from a lot shall depend on the size of the lot (*N*) and shall be in accordance with col 1 and 2 of Table 2.

A-2.3 The drums to be selected for sampling shall be chosen at random, preferably with the aid of random number tables. In order to ensure randomness of selection, IS 4905 : 1968 may be followed.

Table 2 Number of Drums to be Selected

(*Clause* A-2.2)

Lot Size *N*	Number of Drums to be Selected *n*
(1)	(2)
Up to 10	3
11 to 20	5
21 to 30	7
31 to 50	10
51 and above	15

A-3 TEST SAMPLES AND REFEREE SAMPLES

A-3.1 Preparation of Test Samples

A-3.1.1 Draw with an appropriate sampling instrument a small portion of material from different parts of each drum selected for sampling, after mixing thoroughly the contents of the drum and then allowing the liquid to come to rest. The total quantity of the material drawn from each selected drum shall be sufficient to make triplicate determinations for all the characteristics given in Table 1.

A-3.1.2 Thoroughly mix portions of material drawn from the same drum. Out of these portions, a small equal quantity shall be taken from each selected drum and shall be well mixed up together so as to form a composite sample. This composite sample shall be divided into three equal parts, one for the purchaser, another for the supplier and the third to be used as referee sample.

A-3.1.3 The remaining portions of the material drawn from each drum (after small quantity needed for the preparation of composite sample has been taken) shall be divided into three equal parts. These parts shall be transferred immediately to thoroughly dried bottles which are then sealed air-tight with stoppers and labelled with the particulars of sampling given in **A-1.4**. The material in each such sealed bottle shall consitute an individual test sample. These individual samples shall be separated into three identical sets in such a way that each set has a test sample representing each drum selected. One of these three sets shall be sent to the purchaser, another to the supplier and the third shall be used as referee sample.

A-3.2 Referee Sample

The referee sample shall consist of the composite sample (*see* **A-3.1.2**) and a set of individual test samples (*see* **A-3.1.3**) marked for this purpose and shall bear the seals of the purchaser and the supplier. These shall be kept at a place agreed to between the purchaser and the supplier and shall be used in the case of dispute between the two.

A-4 NUMBER OF TESTS

A-4.1 Tests for total soluble silicates and the ratio for total alkalinity to total soluble silica shall be carried out on any three individual samples, selected at random out of those prepared according to **A-3.1.3**. The same samples shall be used for both the tests.

A-4.2 Tests for all other characteristics shall be carried out on the composite sample.

A-5 CRITERIA FOR CONFORMITY

A-5.1 For those characteristics which have been tested on the individual test sample (*see* **A-4.1**), all the test results on each of the individual samples shall satisfy the corresponding requirements given in Table 1, if the lot is to be deemed to conform to those requirements.

A-5.2 For the remaining characteristics prescribed in Table 1, the test results on the composite sample shall meet the corresponding specified requirements.

A-5.3 The lot shall be declared as conforming to the requirements of the specification if **A-5.1** and **A-5.2** are satisfied.

ANNEX B

(Foreword)

COMMITTEE COMPOSITION

General Inorganic Chemicals Sectional Committee, CHD 003

Chairman	*Representing*
Dr M. S. Vaidya	The Dharamsi Morarji Chemical Co Ltd, Ambernath
Members	
Shri R. S. Vyas (*Alternate* to Dr M. S. Vaidya)	
Shri B. M. Agrawal	Central Glass and Ceramics Research Institute, Calcutta
Dr S. K. Roy (*Alternate*)	
Dr A. N. Bhat	Hindustan Lever Ltd, Bombay
Dr S. N. K. Chaudhari (*Alternate*)	
Dr N. Ravi Bhushan	Bharat Electronics Ltd, Bangalore
Dr R. M. Bhatnagar	Projects and Development India Ltd, Sindri
Shri R. M. Cursetji	The Associated Cement Companies Ltd, Bombay
Shri C. H. Page (*Alternate*)	
Shri A. K. Dasgupta	Deepak Nitrite Ltd, Vadodara
Shri D. P. Gupta (*Alternate*)	
Shri A. K. Das	Indian Oxygen Ltd, Calcutta
Shri P. R. Desai	Sarabhai M. Chemicals, Vadodara
Dr A. N. Soni (*Alternate*)	
Shri S. K. Diwan	Federation of Associations of Small Industries of India, New Delhi
Director (Chem)	Development Commissioner (SSI), New Delhi
Shri R. Mukhopadhyay (*Alternate*)	
Dr P. C. Gupta	Indian Chemicals Manufacturers' Association, Calcutta
Shri S. C. Gulati	Oil and Natural Gas Commission, Dehra Dun
Dr S. H. Iqbal	National Chemical Laboratory, Pune
Dr C. Gopinathan (*Alternate*)	
Dr Mohd Zafar Jamil	Indian Institute of Chemical Technology, Hyderabad
Shri P. Joykumaran	Directorate General of Supplies and Disposals, New Delhi
Shri N. K. Kaushal (*Alternate*)	
Shri P. Mazumdar	National Test House, Calcutta
Shri B. M. Sood (*Alternate*)	
Shri A. K. Mehra	Shriram Foods and Fertilizers Industries, New Delhi
Shri S. L. Dewan (*Alternate*)	
Prof P. Natarajan	Central Salt and Marine Chemicals Research Institute, Bhavnagar
Dr O. K. Srivastava (*Alternate*)	
Shri T. C. Patel	Tata Chemicals Ltd, Bombay
Dr K. C. Pathak (*Alternate*)	
Shri P. G. Pradhan	Golden Chemicals Ltd, Bombay
Shri P. I. Bhagat (*Alternate*)	
Shri G. M. Rao	Indian Bureau of Mines, Nagpur
Shri S. R. Bhaisare (*Alternate*)	
Dr S. S. Rathi	Ministry of Defence (DGQA)
Shri P. Das (*Alternate*)	
Dr S. K. Kapoor	Ministry of Defence (R & D)
Dr R. K. Sethi (*Alternate*)	
Shri C. R. Santhanakrishnan	Travancore Chemicals & Mfg Co Ltd, Mettur Dam
Shri K. V. Mani (*Alternate*)	
Shri R. C. Sharma	Directorate General of Technical Development, New Delhi
Shri A. K. Chatterjee (*Alternate*)	
Shri L. B. Shrivastava	Shriram Instittue for Industrial Research, Delhi
Shri V. K. Verma (*Alternate*)	
Shri V. B. Soni	Union Carbide of India Ltd, Bombay
Shri V. K. Chakrawarty (*Alternate*)	
Shri Yudhisthir	Geological Survey of India, Calcutta
Dr K. N. Mathur (*Alternate*)	
Dr R. K. Singh, Director (Chem)	Director General, BIS (*Ex-officio Member*)

Member Secretary

Dr R. K. Jha
Deputy Director (Chem), BIS

(*Continued on page* 5)

(*Continued from page* 4)

Composition of Minerals for Chemicals and Allied Industries Subcommittee, CHD 003 : 04

Convener	*Representing*
Shri V. B. Soni	Electrolytic Mangane Company, Division of Union Carbide of Indian Ltd, Thane
Members	
Shri A. K. Chakravarti (*Alternate* to Shri V. B. Soni)	Electrolytic Mangane Company, Division of Union Carbide of India Ltd, Thane
Shri B. H. Patel	Deepak Nitrite Ltd, Vadodara
Shri H. R. Shah (*Alternate*)	
Representative	Development Commissioner, Small Scale Industries, New Delhi
Representative	Geological Survey of India, Calcutta
Shri S. S. Singhania	Indian Council of Small Industries, Calcutta
Shri B. L. Kanodia (*Alternate*)	
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Shri B. Mukherjee (*Alternate*)	
Shri S. Balasubramanian	Tamil Nadu Chemicals Products Ltd, Madras
Shri K. Subramanian (*Alternate*)	
Shri P. C. Gopinathan	The Travancore-Cochin Chemicals Ltd, Udyogamandal
Shri K. Namboothiri (*Alternate*)	
Shri S. K. Barat	Waldies Ltd, Calcutta
Shri S. Banerjee (*Alternate*)	

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